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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/533,591	03/23/2000	Jung Chuan Chou	H000010	1107

7590 09/08/2003

INTELECTUAL PROPERTY SOLUTIONS, INCORPORATED
5717 COLFAX AVENUE
ALEXANDRIA, VA 22311

EXAMINER

ORTIZ, EDGARDO

ART UNIT	PAPER NUMBER
	2815

DATE MAILED: 09/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No. 09/533,591	Applicant(s) Chou Et.al.
Examiner Edgardo Ortiz	Art Unit 2815



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on Jun 20, 2003

2a) This action is FINAL. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-11 is/are pending in the application.

4a) Of the above, claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 1-11 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claims _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on _____ is/are a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some* c) None of:

1. Certified copies of the priority documents have been received.

2. Certified copies of the priority documents have been received in Application No. _____.

3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

a) The translation of the foreign language provisional application has been received.

15) Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) Notice of References Cited (PTO-892)

4) Interview Summary (PTO-413) Paper No(s). _____

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)

5) Notice of Informal Patent Application (PTO-152)

3) Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____

6) Other: _____

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DETAILED ACTION

This Office Action is in response to an amendment filed June 20, 2003 on which Applicant amended claim 1.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-11 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Covington et.al. (U.S. Patent No. 4,502,938) in view of Applicant's admitted prior art as disclosed on page 4, lines 28-30 and page 5, lines 1-16 of the instant application. With regard to Claim 1, Covington teaches a semiconductor substrate (3), a gate oxide layer (6) on the semiconductor substrate, a source/drain (1, 2) in the semiconductor substrate beside the ion-selective membrane layer, a metal wire (8, 9) on the source/drain and a sealing layer (11) overlying the metal wire and exposing the ion-selective membrane layer.

However, Covington fails to teach a tungsten oxide layer which overlies the gate oxide layer in the gate structure. Applicant's admitted prior art discloses that "*The composition of the WO₃ layer and its properties vary with the selected method and condition during preparing the WO₃*

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layer. Most of the WO₃ layers are amorphous, polycrystalline or crystalline". Therefore, it would have been an obvious modification to someone with ordinary skill in the art, at the time of the invention, to modify the Covington structure to include a tungsten oxide layer which overlies the gate oxide layer in the gate structure, as clearly suggested by Applicant's admitted prior art, in order to provide a gate structure including a material such as amorphous tungsten oxide, which has a large resistivity and thus is ideal for use as a sensor.

Lastly, the claim contains the limitation "an a-WO₃ *formed by RF-sputtering*", this is a product by process limitation that does not structurally or patentably distinguish the claimed invention from that taught by the prior art as noted. A "product by process" claim is directed to the product per se, no matter how actually made, In re Brown, 173 USPQ 685; In re Luck, 177 USPQ 523; In re Fessmann, 180 USPQ 324; In re Avery, 186 USPQ 161; In re Wertheim, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); In re Marosi et al, 218 USPQ 289; and particularly In re Thorpe, 227 USPQ 964, all of which make it clear that it is the patentability of the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. Note that applicant has the burden of proof in such cases, as the above case law makes clear.

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With regard to Claim 2, a further difference between the claimed invention and the teachings of Covington and Gardner is, the length, width and width/length ratio of the channel region. It would have been an obvious modification at the time of the invention, to modify the structure as taught by Covington and Applicant's admitted prior art to include the claimed dimensions, in order to provide a channel region which reduces the source-to-drain capacitance.

With regard to Claim 3, a further difference between the claimed invention and the teachings of Covington and Applicant's admitted prior art is, a semiconductor substrate being P-type. It would have been an obvious modification at the time of the invention, to modify the structure as taught by Covington and Applicant's admitted prior art to include a semiconductor substrate being P-type, since it is a well-known practice in the art to provide a semiconductor substrate with a specific polarity so that the active regions and the channel can be doped for proper transistor functioning.

With regard to Claim 4, a further difference between the claimed invention and the teachings of Covington and Applicant's admitted prior art is, a semiconductor substrate having a resistivity of 8 to 12 ohms-cm. It would have been an obvious modification at the time of the invention, to modify the structure as taught by Covington and Gardner to include a semiconductor substrate having a resistivity of 8 to 12 ohms-cm, based on the dopant and the polarity of the material used for the semiconductor substrate.

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With regard to Claim 5, Covington teaches a semiconductor with a lattice parameter of (1,0,0).

With regard to Claim 6, Covington and Applicant's admitted prior art fails to teach a gate oxide having a thickness of about 1000Å. It would have been an obvious modification at the time of the invention, to modify the structure as taught by Covington and Applicant's admitted prior art to include a gate oxide having a thickness of about 1000Å, in order to provide a proper gate oxide based on the dielectric constant of the metal oxide used in the gate structure.

With regard to Claim 7, Covington and Applicant's admitted prior art fails to teach a thickness of a tungsten oxide layer that is at least 1000Å. Gardner teaches a tungsten oxide layer that has a thickness which is variable depending on the specific application. Therefore, it would have been an obvious modification at the time of the invention, to modify the structure as taught by Covington and Applicant's admitted prior art to include a tungsten oxide layer that is at least 1000Å, in order to provide a tungsten oxide layer with the thickness required depending on a specific application.

With regard to Claim 8, Covington teaches a metal wire consisting of Al.

With regard to Claim 9, Covington teaches a sealing layer consisting of epoxide resin.

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With regard to Claim 10, a further difference between the claimed invention and the teachings of Covington and Applicant's admitted prior art is, a source/drain being N-type. It would have been an obvious modification at the time of the invention, to modify the structure as taught by Covington and Gardner to include a source/drain being N-type, since it is a well-known practice in the art to provide a specific polarity dopants to the active regions, relative to the channel or substrate, for proper transistor functioning

With regard to Claim 11, a further difference between the claimed invention and the teachings of Covington and Applicant's admitted prior art is, N-type impurities consisting of phosphorous. It would have been an obvious modification at the time of the invention, to modify the structure as taught by Covington and Applicant's admitted prior art to include N-type impurities consisting of phosphorous, since it is a well-known practice in the art to provide a source/drain with a Group-V dopant in order to provide an N-type active region.

Response to Arguments

2. Applicant's arguments with respect to claims 1-11 have been fully considered, but are not deemed persuasive for the reasons stated in the body of the office action. Applicant argues that "*amorphous tungsten oxide formed by RF-sputtering, as now recited in independent claim 1, is not disclosed in any of the references cited by the Examiner*", however as noted in the body of the rejection, the claimed invention does not structurally nor patentably distinguish from that

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taught by Covington and Applicant's admitted prior art. The aforementioned limitation merely claims the method to produce the amorphous tungsten oxide, which does not structurally distinguishes the claimed apparatus invention from the disclosures of Covington and Applicant's admitted prior art.

Conclusion

3. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Edgardo Ortiz (Art Unit 2815), whose telephone number is (703) 308-6183 or by fax at (703) 308-7724. In case the Examiner can not be reached through a direct

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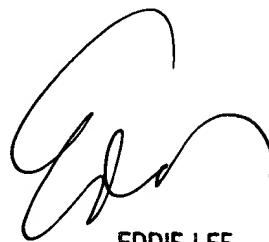
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telephone call, you might call Supervisor Eddie Lee at (703) 308-1690. Any inquiry of a general nature or relating to the status of this application should be directed to the Group 2800 receptionist whose telephone number is (703) 308-0956.

EO / AU 2815

9/3/03



EDDIE LEE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800